

Bulletin of the Agricultural Chemical Society of Japan.

ABSTRACTS

from

TRANSACTIONS published in JAPANESE

(Pages refer to the Japanese originals of this volume unless otherwise noted.)

Bestandteile der Fettsäuren des Zuckerrohrwachses (Zuckerrohrwachs. VIII. Mitteilung.⁽¹⁾)

(SS. 719~722)

Von T. MITUI und J. MATUDA.

(Aus dem Agrilkulturchem. Laboratorium der Kaiserl. Universität Kyoto;
Eingegangen am 15. 4. 1942.)

Über die unverseifbaren Bestandteile des Zuckerrohrwachses hat T. Mitui in seiner I.~VII. Mitteilung berichtet.

Hier haben wir nun den verseifbaren Anteil dieses Wachses genauer untersucht. Unseren Beobachtungen nach ergeben sich als verseifbare Bestandteile der Fettsäuren die folgenden:

Fettsäuren 100%	flüchtige Säure 1.3%.....n-Caprinsäure	
	NaHCO ₃ löslich 20%.....	Harzsäure
		Linolensäure 0.3%
	flüssige Säure 28%	α-Linolensäure 4%
		Ol-säure 14%
nicht flücht. Säure	NaHCO ₃ schwer löslich	Caprinsäure
		Myristinsäure 0.8%
	feste Säure	Palmitinsäure 38%
		Stearinsäure 4%
		Behensäure 1.5%
		u. a.

((1) VII. Mitteil.: J. Agr. Chem. Soc. Japan, 16 (1940) 917.

Synthesis of Vitamin B₁ by Microbes. 1.

(pp. 723~726)

By Kiyosi ASIDA.

(Agricultural Chemical Laboratory, Tokyo Imperial University; Received April 16, 1942.)

Untersuchungen über Vitamin in zuckerhaltigen Stoffen (III).

Über den Vitamin B₆-Gehalt von der Spitze des
Zuckerrohrs und Schlempe.

(SS. 727~732)

Von Tyoten INAGAKI und Kiyoko NAGAO.

(Chemisches Lebensmittel-Forschungsinstitut der Meiji Zuckerindustrie;
Eingegangen am 11. 4. 1942.)

Studies on the Yeasts Found in "Miso."

(pp. 733~741)

By Masatoshi MOGI.

(The Brewing Laboratory, Noda Syōyū Co., Ltd., Tiba-ken; Received April 14, 1942.)

Studies on the Oxidation of Amino Acids by Potassium Chlorate. (Part I).

On the Oxidation of Glutamic Acid and Amino Acid Solution
Decomposed from Protein Containing Materials.

(pp. 742~746)

By Tuneyosi KATUDA.

(The Institute of Research on Chemical Industry, Government-General of Taiwan;
Received March 9, 1942.)

Studies on Digestion of Imported Rice.

(pp. 747~765)

By T. CHACHIN and M. KUBO.

(Municipal Hygienic Laboratory in Osaka; Received January 16, 1942.)

An experiment on the digestion of Japanese and imported rices was carried out and the result was as follows:

Digestion coeff. (%) of Japanese and imported rices.

	Protein	Fat	Carbo- hydrate	Fibre	Ash	Calorie
	%	%	%	%	%	%
Japanese rice	80.05	83.06	99.48	66.06	81.96	95.20
70% imported mixed	79.95	87.26	99.50	72.59	84.33	95.50
Imported rice	80.59	87.84	99.63	77.75	86.20	95.52

There is no difference in the digestion coefficient between Japanese and imported rices.

Über die quantitative Bestimmung der Pyrethrine. (XII. Mitteilung.⁽¹⁾)

Eine neue Massanalyse der Pyrethrine durch Benzol-Extraktion.

(SS. 766~775)

Von Kiyoshi WAKAZONO, Keizo HIRAOKA, und Sankiti TAKEI.

(Aus d. Institut f. Chem. Forschung, Universität Kyoto;

Eingegangen am 28. März 1942.)

Zur quantitativen Bestimmung der Pyrethrine benutzt man als unentbehrliches Extraktionsmittel stets Petroläther (Kp. 40~60°).

Neuerdings haben wir gefunden, dass man durch einige Modifikationen des bisherigen massanalytischen Verfahrens zur Pyrethrin-Extraktion ruhig statt Petroläther Benzol als geeignetes Lösungsmittel benutzen kann und auch auf diese Weise durchaus befriedigende Resultate zu gewinnen vermag.

(1) XI. Mitteil.: J. Agr. Chem. Soc. Japan, 18, 229 (1942).

Functional Studies on Soils. (LIX).

(pp. 776~780)

By MISU-Hideo.

(Agricultural Experiment Station, Tyōsen; Received March 23, 1942.)

Dehalogenations of the Halogenated Sugar Alcohols.

(pp. 666~668)

(pp. 781~784)

By Yasuji HAMAMURA.

(Kyoto Sericultural College; Received March 2, 1942).

(Part VI.) Dehalogenation of Dichlorodulcitol by Zinc with Acetic Acid.

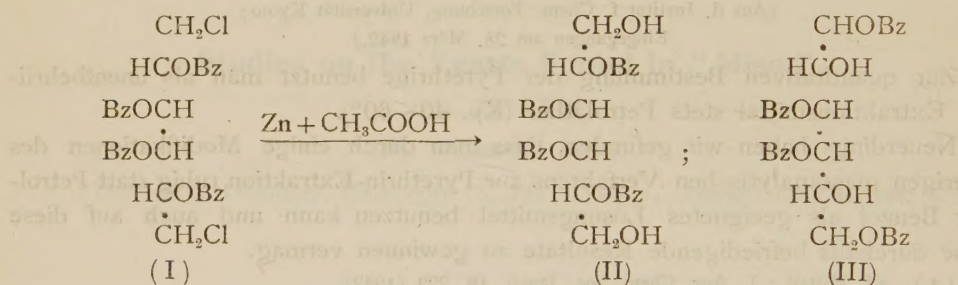
Now 1,6-dichlortetrabenzoyl dulcitol (I) was treated with zinc with acetic acid on the boiling water bath but the reaction proceeded very reluctantly. From

the incompletely dehalogenated mixture two crystals were isolated. One melted at 242°C, insoluble in acetone and the other at 137~142°C, soluble in acetone and hot alcohol.

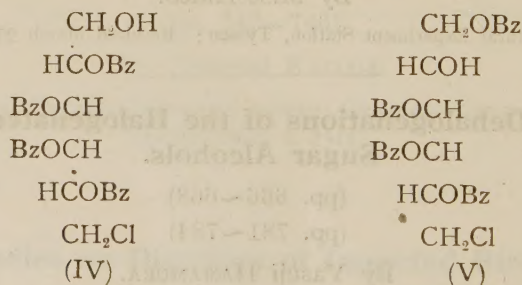
The former was free from chlorine and the latter had one mol chlorine. When the dehalogenating reaction was continued longer another crystal was obtained which melted at 208°C, and it was acetone-insoluble and free from halogen.

The crystal of m. p. 224°C (II) has no double bond but two free hydroxyl groups and gives hexabenzoyldulcitol (m. p. 192~3°) when benzoylate, and also gives dulcitol when hydrolysed by methyl alcoholic baryta.

The crystal m. p. 208°C (III) is the isomer of (II) and is smoothly obtained by heating the latter with pyridine by acyl migration. These facts show that the crystal m. p. 224°C (II) has been obtained by substitution of hydroxyl groups with chlorine atoms, so that this structure must be 2,3,4,5-tetrabenzoyldulcitol C% 68.05, H% 5.36, (calc. 68.08 H% 5.04) and that the other is 1,3,4,6-tetrabenzoyldulcitol C% 68.05, H% 5.38.,



The crystal m. p. 137~142°C seems to be the mixture of two substances. It may be the mixture of (IV) and (V) Cl% 5.40, C% 66.38, H% 4.79 (calc. Cl% 5.75, C% 66.17, H% 4.73)

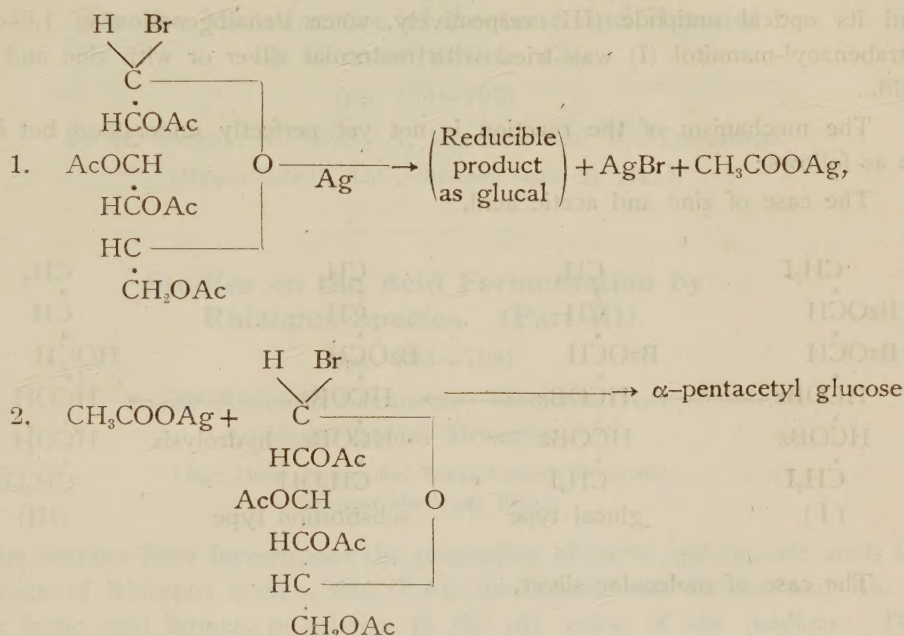


It gives monochlor-pentabenzoyldulcitol m. p. 126°C, C% 68.60, H% 4.85 (calc. C% 68.26 H% 4.61).

(Part VII.) Action of Molecular Silver on Acetobromoglucose.

The author obtained α -pentacetylglucose together with a reducible product from acetobromoglucose reacting with molecular silver.

It may perhaps be a product of the secondary reaction taking place between acetobromoglucose and silver salt of acetic acid which are produced in the first stage of the reaction.



(Part VIII.) The Types of the Dehalogenation of Halogenated Sugars.

The author classified the types of the dehalogenation of sugars into six classes as follows:

1. Glucal type: The model is E. Fischer's glucal⁽¹⁾ derived from acetobromoglucose.
2. Glucoseen type: The model is glucoseen⁽²⁾ derived from acetobromoglucose.
3. Anhydride type: The model is 3,6-anhydroglucose⁽³⁾ derived from triacetyl- β -methyl-glucoside-6-bromhydrin.
4. Substitution type: The model is 2,3,4,5-tetrabenzoyl dulcitol⁽⁴⁾ derived from 1,6-dichlor-tetrabenzoyl dulcitol.
5. Secondary derived type: The model is α -pentacetyl-glucose⁽⁵⁾ derived from acetobromoglucose.

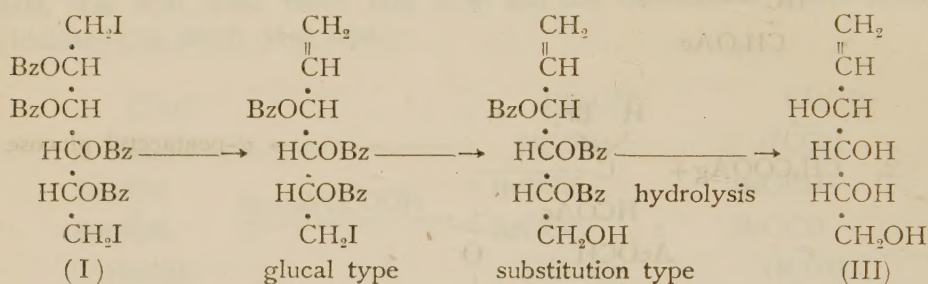
6. Normal type: The model is tetrahydroxy-manno-cyclitol⁽⁶⁾ derived from 1,6-diiodo-2:3, 4:5-dimethylene mannitol.

As above mentioned, the dehalogenations of halogenated sugar esters are very complex and more complex when two halogen atoms are substituted, because dehalogenations are caused in different types on each halogen atom, and, moreover, secondary reactions take place.

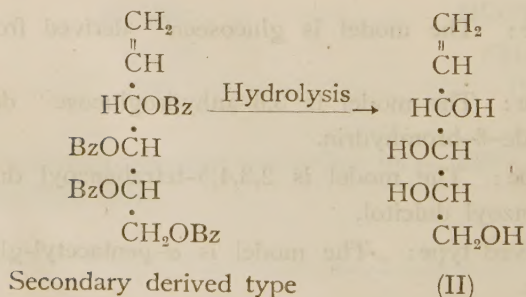
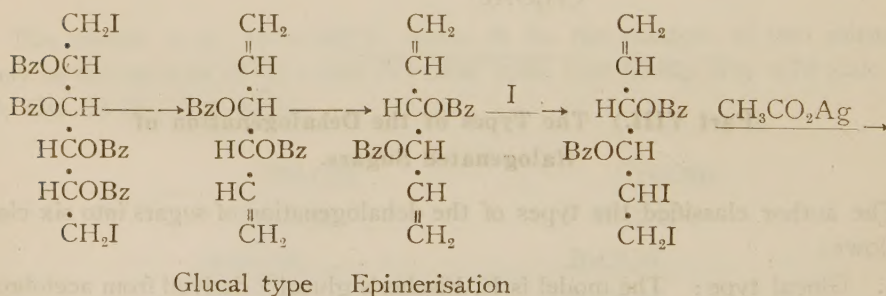
The author has always obtained *l*-3,4,5,6-tetrahydroxy-manno-hexene (1:2) (II) and its optical antipode (III) respectively, when dehalogenation of 1,6-diiodo-tetrabenzoyl-mannitol (I) was tried with molecular silver or with zinc and acetic acid.

The mechanism of the reaction is not yet perfectly understood but it may be as follows:

The case of zinc and acetic acid,



The case of molecular silver,



- (1) E. FISCHER: B., **47**, 200 (1915).
- (2) MAUCER: B., **62**, 332 (1929).
- (3) E. FISCHER: B., **45**, 456, 2068, 376L (1912).
- (4) Y. HAMAMURA: J. Agr. Chem. Soc. Japan,
- (5) Y. HAMAMURA: J. Agr. Chem. Soc. Japan,
- (6) F. MICHEEL: A., **495**, 77 (1932).

On the Manufacture of Acetone and Butanol by Fermentation. (3).

(pp. 785~792)

By H. OKEDA, N. SOWA, A. WATABE, and Y. HASHIMOTO.

(Nippon Soda Co. Ltd.; Received March 23, 1942.)

Studies on the Acid Fermentation by Rhizopus Species. (Part III).

(pp. 793~798)

By Kinichirō SAKAGUCHI, Toshinobu ASAI,
and Hirohisa MUNEKATA.

(Agr. Chem. Laboratory, Tokyo Imperial University;

Received March 16, 1942.)

The authors have investigated the production of lactic and fumaric acids by two strains of *Rhizopus* species, Rh. G 34, the fumaric acid former, and Rh. G 36, the lactic acid former, in relation to the pH value of the medium. The summary of the results obtained is as follows:—

	Rh. G 36					Rh. G 34				
The pH values of the medium	initial									
	end									
Volatile acid (cc. of $N/10$ NaOH)	3.7	4.5	7.2	24.0	32.5	4.2	4.2	3.4	4.4	17.0
Fumaric acid (g)	0	0	0	0.015	0.248	0.098	1.323	1.888	2.792	1.359
Lactic acid (g)	1.205	4.654	4.986	8.305	6.971	0.012	0.057	0.070	0.678	0.126
Total non-volatile acid (g)	1.205	4.654	4.986	8.320	7.219	0.110	1.380	1.958	3.470	1.485
Fumaric acid/Lactic acid	0	0	0	1/573	1/28	8/1	23/1	27/1	1/4	11/1

N. B.: The results correspond to 300 cc of the culture medium.

Appreciable quantities of fumaric acid have been formed by the lactic acid former at pH values higher than 7 along with lactic acid. The optimum pH zone of the medium for the production of fumaric and lactic acids by *Rhizopus* species seems to lie near pH=7. The accumulation of the volatile acids is favoured by a neutral or alkaline reaction of the medium.

Der bakterielle Abbau der Aminosäuren.

III. Mitteilung.

(SS. 799~808)

By Teijiro UYEMURA,

(Wissenschaftl. Laboratorium von Ch. Takeda Co. Ltd., Osaka:
Eingegangen am 5. 4. 1942.)

Grundlegende Untersuchungen über die Fixierung des Sericins. (6 Mitteilung)

(SS. 809~817)

Von Ziro HIROSE.

(Aus dem Institut für Seidenbau, der Aktiengesellschaft, Gunze-Seers,
zu Ayabe, Kyotofu: Eingegangen am 13. 4. 1942.)

Production of Mono-propen-1-ol-3-phosphoric Acid by *Aspergillus Niger*.

(pp. 818)

By Sinitiro BABA.

(Agricultural Chemical Laboratory, Tokyo Imperial University;.

Received July 20, 1942.)